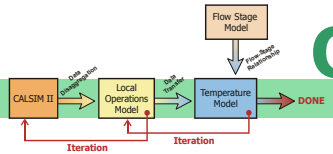


Operations Modeling – Sensitivity Analysis Series

Sensitivity Analysis allows a special interest to explore ranges of potential system responses to controlled changes in operating conditions derived from the Benchmark Studies or a separate source of information

Scenario Number: 17

Scenario Objective:

Investigate the downstream limits of temperature control in the high-flow section of Feather River from Thermalito Afterbay outlet to confluence with the Sacramento River by operation of the Oroville Facilities in July through September (summer months).

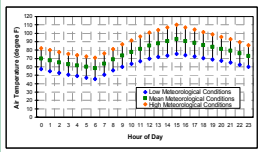
Model Use:

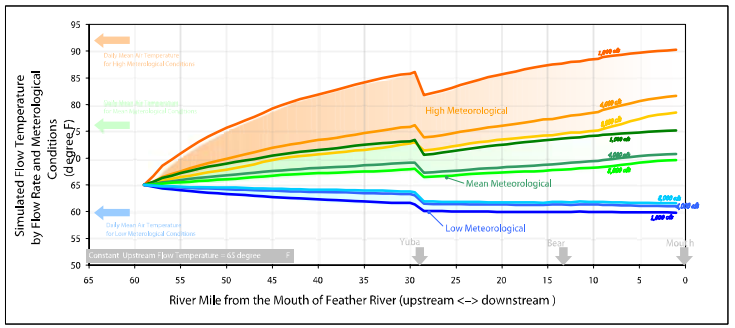
- **WQRRS**
- **Model was modified to include the high-flow section of the Feather River only**

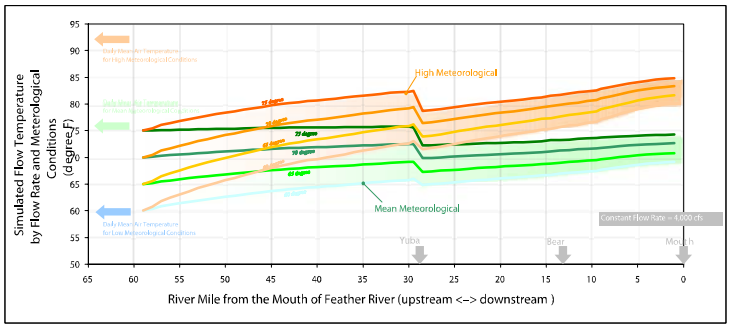
Approach

- **The diurnal variations of shortwave radiation, longwave radiation and dew point temperatures were developed based on July through September of 14-year records.**
- **High, and low meteorological conditions represent the upper and lower bounds of a range with about 95 percent of occurrence.**
- **Headwater flows and temperatures were selected to bracket typical historical conditions.**
- **Tributary flows were derived from historic data. Their temperatures are based on correlations with assumed ambient air temperatures.**

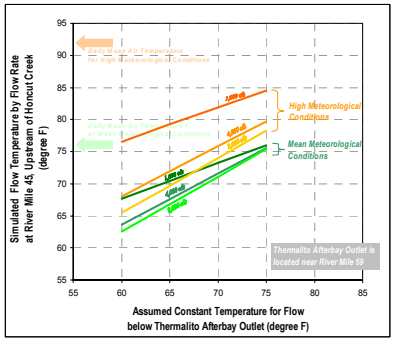
Model Inputs

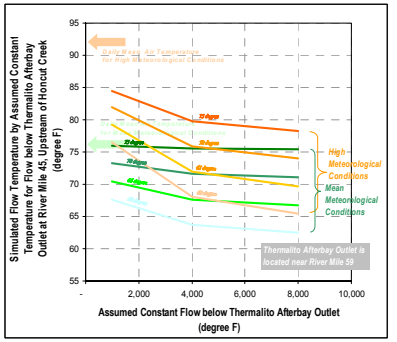




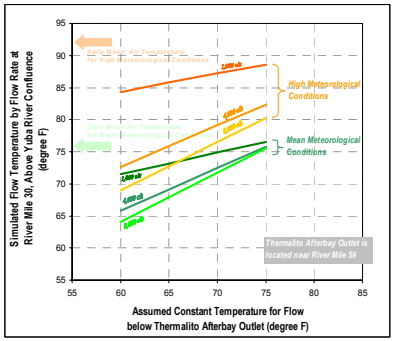


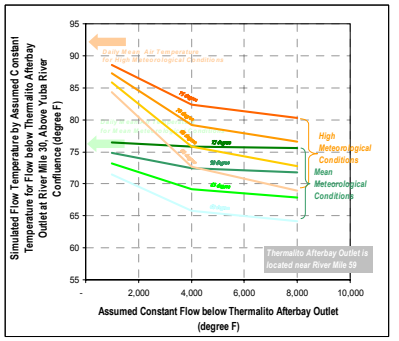
River Mile 45
Upstream of Honcut Creek





River Mile 30
Upstream of Yuba River





Operations of Oroville Facilities to facilitate assumed flow and temperature were not evaluated.

Findings:

- **Among the factors evaluated in this scenario, meteorological conditions have the largest influence on effects of temperature control provided by the Oroville Facilities.**
- **High flow conditions are helpful in maintaining river temperature; however, the sustainability of high releases in summer and fall months and its consequent water supply impacts are not evaluated under this scenario.**